addressed to advanced students of the University and to others interested in the subject. Admission is free, without ticket.

Other advanced courses to be delivered are:—Six lectures on "The Physical Properties of Soil" (Imperial College of Science and Technology), by Mr. Bernard A. Keen, on Tuesdays at 4.30 p.m., beginning on February 3; and a course on "A General Survey of the Globe and its Atmosphere," with practical work (Meteorological Office, South Kensington), by Sir Napier Shaw, on Fridays at 3 p.m. during the second term, beginning on January 23.

Dr. D. W. Carmalt Jones has been appointed to the chair of systematic medicine in the University of Otago, New Zealand.

Miss F. M. G. Micklethwait has been appointed principal of the Horticultural College, Swanley. Miss Micklethwait holds the diploma of the college, and was a Beit research fellow; she has published a number of papers on her researches upon chemical subjects.

In connection with the London County Council's lectures for teachers on recent developments in science, a lecture on "Aviation" will be given by Lord Montagu of Beaulieu at King's College, Strand, W.C.2, on Tuesday, January 13, at 6 p.m. The chair will be taken by Major-Gen. Sir Frederick H. Sykes.

The Civil Service Commissioners announce that an examination will begin on May 4 next for the purpose of filling ten vacancies for assistant examiners in the Patent Office. The examination will be confined in the main to candidates who have served in his Majesty's Forces, and will consist of a qualifying examination followed by interview by a selection board. The subjects of the qualifying examination are English composition, *précis*-writing, general knowledge, and *one* of the following: General chemistry, electricity and magnetism, mechanics and mechanism. The limits of age are twenty to thirty. Initial salary 150*l.* a year, together with a war bonus. Copies of the regulations and forms of application may be obtained by writing to the Secretary, Civil Service Commission, Burlington Gardens, London, W.1. The last day for making application is March 4.

In a pamphlet on college studies, published by the Stanford University of California, Prof. H. W. Stuart, professor of philosophy in the University, points out that the old discussion on the relative merits of literary and scientific studies in the training of a well-educated man has now become the problem whether citizenship in the modern world can be based on the contemplation, criticism, and enjoyment of life, or whether it requires a capacity for constructive participation in the activities of life in addition. It is remarked that while a literary education supplies a direct acquaintance with the characteristic interests and experiences of life, and a scientific education a knowledge of the means and machinery of life, neither recognises adequately those interests which find expression in the family, amongst friends, in play, or in the responsibilities of citizenship. Culture, in Prof. Stuart's opinion, expresses a personal capacity for conduct, not the body of knowledge of which the person makes use. It must comprise both literary and scientific discipline and study and experience of social science. The evidence of culture in an individual is the proper fulfilment of his functions in the society in which he lives, and each age must have its own standard of culture.

SOCIETIES AND ACADEMIES.

LONDON.

Aristotelian Society, December 15, 1919.—Prof. A. N. Whitehead in the chair.—Dr. G. E. **Moore**: External and internal relations. The most important part of what is meant by those who say that no relations are purely external seems to be the proposition that *every* relational property belongs *necessarily* to every term to which it belongs *in part*. This proposition is false, the truth being that *some* only among relational properties belong necessarily to those terms which possess them. To say that the property P belongs necessarily to the subject S is to say that from the proposition, with regard to any term, A, that it has not got P, it *follows* that A is numerically different from S. And this has been falsely taken to be true of every P and every S, because it is, in fact, true that from the proposition "S is P" it *follows* that any term, A, which has not got P is, *in fact*, other than S. The proposition that if *p* is true, then the conjunction "*q* is true and *r* false" *must* be false, has been compared with the proposition that if *p* is true, then "*q* is true and *r* false" is *necessarily* false in the sense that *r follows* from *q*. From the proposition "from '*p* is true' it *follows* that '*q* is true and *r* false' is false," it does not follow that, if *p* is true, then *r follows* from *q*.

Geological Society, December 17, 1919.—Mr. G. W Lamplugh, president, in the chair.—Prof. S. J. **Shand**: A rift-valley in Western Persia. Asmari Mountain, near the oilfields of Maidan-i-Naftun, in the Bakhtiari country of Western Persia, is an inlier of Oligocene limestone among the beds of the Fars system (Miocene), the latter consisting, in the lower part, of bedded gypsum with intercalated shales and a few thin limestones. The mountain is a whale-back, formed by a simple symmetrical anticline plunging at both ends. The north-western end plunges rather steeply, and shows no abnormal structures; but at the south-eastern end the fold has collapsed along its length for a distance of three miles, letting the gypsum-beds down into a trough in the limestone. This trough is bounded by two main faults hading north-eastwards and south-westwards respectively, with an average hade of 20°, and marked by steep escarpments. The gypsiferous beds which once completely filled the trough have been partly removed by erosion, clearly revealing the fault-walls in the lower part of the valley.

MANCHESTER.

Literary and Philosophical Society, December 16, 1919.—Sir Henry A. Miers, president, in the chair.—C. E. **Stromeyer**: The study of nationalities. Although structural peculiarities are very useful for differentiating non-related species, they are of little use for the purpose of classifying branches of one species, and it is necessary to study their characteristics. There are very marked differences amongst the characteristics of different nationalities, *i.e.* the Semitic and Slavonic races have wonderful memory gifts, and the Scandinavians are pre-eminently inventive. The author dealt with the vague words employed in defining various characteristics and with the reagents which might be employed for revealing fundamental characteristics of different nationalities.—W. J. **Perry**: The historical process. The study of the geographical distribution of peoples in various stages of culture, and of the migrations of peoples, suggests that the degree of civilisation possessed by any community that has advanced beyond the pure hunting stage is the result, direct or indirect, of cultural influences propagated from some original centre. It seems as

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though the fundamental arts and crafts of civilisation were invented in one place, and that the knowledge of them was carried to the outlying parts of the earth, thus producing the various degrees of culture possessed by different communities. The study of archæological remains supports this contention. If this conclusion be accepted, it becomes possible to regard the study of human society from a point of view different from that commonly adopted. We can examine the effects of various social institutions on behaviour. The hunting tribes, the most primitive men of whom we have direct knowledge, display a uniform type of behaviour: they are peaceful, truthful, monogamous, honest, kind to children and animals, and thus, presumably, represent the normal type of human behaviour. The people above them in culture have adopted the institutions of civilised peoples to varying degrees, and their modes of behaviour appear to correspond to their historical experience. The wide range of culture which exists in the world makes it possible to examine in detail the effects upon human beings of various social institutions, and thus to pave the way for the foundation of a science of society, the ultimate aim of which will be to determine which institutions are fitted to develop men to the greatest possible extent.—Prof. F. E. **Weiss**: Green jade work by natives of New Zealand.

PARIS.

Academy of Sciences, December 8, 1919.—M. Léon Guignard in the chair.—A. **Laveran**: Obituary notice of Prof. R. Lépine, correspondant of the Academy of Sciences.—C. **Moureu**, C. **Dufraisse**, and P. **Robin**: The stabilisation of acrolein. Part 4. Compounds hindering the formation of disacryl.—C. **Richet**: Injections of gum or of plasma after bleeding. A criticism of a recent communication by M. Barthélemy. The animal must have lost more than 70 per cent. of its blood before the injection, of solution or plasma, or its survival cannot be regarded as decisive.—V. **Grignard**, G. **Rivat**, and Ed. **Urbain**: Researches on the chlorination of methyl formate and methyl chloroformate. Details of a semi-industrial method for the preparation of the ultimate chlorination product, CCl_3CO_2Cl.—M. Paul Janet was elected a free Academician in succession to the late M. Landouzy.—G. **Valiron**: Regular ensembles of zero measure.—M. **Mesnager**: Elementary solution of the rectangular plate fixed at the edges, carrying a load uniformly distributed or concentrated at its centre.—E. **Belot**: Possible causes of the light curve and the pulsation of Cepheus.—I. **Tarazona**: Observation of the solar eclipse of November 22, 1919, at the astronomical observatory of the University of Valencia, Spain. The first contact was found to be 8·4 seconds earlier than calculated.—J. **Guillaume**: Observations of the sun made at the Lyons Observatory during the second quarter of 1919. Observations were made on eighty-one days, and the results summarised in three tables showing the number of spots, their distribution in latitude, and the distribution of the faculæ in latitude.—Ed. **Fouché**: Search for a characteristic equation applicable to atmospheric air. The equation is of the Clausius form,

$$\left[p+\frac{\psi}{(v+n)^2}\right](v-b)=\mathrm{RT},$$

in which ψ is a function of the temperature only. The constants n, b, R are determined from experiments by Witkowski, pressures ranging from 1 to 130 atmospheres and temperatures from −145° C. to +100° C.—G. A. **Hemsalech**: The origin of luminous radiations emitted by vapours in an electrical resistance tube furnace. The spectrum results from two independent emissions, one of which is of thermal and the other of electrical origin.—P. **Jolibois**: An apparatus for rapidly mixing homogeneous liquids.—E. **Mesnard**: Cyclonic formations of the atmosphere.—Ph. **Flajolet**: Perturbations of the magnetic declination at the Lyons Observatory (Saint-Genis-Laval) during the first and second quarters of 1919.—L. **Blaringhem**: Floral anomalies observed in hybrid plants from *Linaria vulgaris* × *L. striata*.—P. **Descombes**: The use of trees in extracting water from the atmosphere. Evidence from various sources of the increased deposit of moisture, as dew, caused by trees.—A. **Piédallu**: The *rôle* of iron in the blue *casse* of wines.—Mlle. Lucienne **Dehorne**: Hermaphroditism and scissiparity.—H. **Bierry**: Inanition, temperature, and glycemea.—A. **Richaud**: The action of ouabaine and of strophantine on the salivary secretion, and the mechanism of this action.—A. **Clerc** and C. **Pezzi**: The antagonism of adrenalin and quinine.—C. **Oberthür**: The symbiosis of ants and the caterpillars of Lycæna.—A. **Paillot**: Natural immunity in insects. Study of a case of humoral immunity.—C. **Nicolle**, A. **Cuénod**, and G. **Blanc**: Experimental demonstration of the *rôle* of flies in the propagation of trachoma (granular conjunctivitis).

CAPE TOWN.

Royal Society of South Africa, October 15.—Dr. J. D. F. Gilchrist, president, in the chair.—Sir Thomas **Muir**: Additional note on the resolvability of the minors of a compound determinant.—J. **Moir**: Colour and chemical constitution. Part ix. An empirical law of change of colour. The wave-lengths of the absorption spectra of all the halogen derivatives, and many other derivatives of phenolphthalein and fluorescein, can be calculated from the formula

$$\frac{n}{n_0}=\frac{\lambda_0}{\lambda}=1-0{\cdot}0115m-0{\cdot}000037m\mathrm{N},$$

in which n = frequency, λ = wave-length, m = number of halogens, etc., and N = atomic number of halogen in question. All the groups investigated have very similar effects on the colour, a most remarkable fact.—J. S. **Thomson**: South African Alcyonacea.

BOOKS RECEIVED.

Has the North Pole been Discovered? By T. F. Hall. Pp. 539. (Boston, Mass.: R. G. Badger.) 2.50 dollars net.

Glass Manufacture. By Dr. W. Rosenhain. Second edition. Pp. xv+258. (London: Constable and Co., Ltd.) 12*s.* 6*d.* net.

Cours de Chimie à l'usage des Etudiants P.C.N. et S.P.C.N. By Prof. R. de Forcrand. Deux^{e}. édition. Tome i. Pp. viii+437. Tome ii. Pp. 527. (Paris: Gauthier-Villars et Cie.) 14 francs and 18 francs respectively.

Democracy and the Press. By Dr. F. H. Hayward and B. N. Langdon-Davies. Pp. xii+76. (Manchester and London: The National Labour Press, Ltd.) 1*s.* 6*d.*

The School Geometry: Matriculation Edition. By W. P. Workman and A. G. Cracknell. Pp. xi+348. (London: W. B. Clive.) 4*s.* 6*d.*

Pensées sur la Science la Guerre et sur des Sujets très Variés. By Dr. M. Lecat. Pp. vii+478. (Bruxelles: M. Lamertin.)

Pre-Palæolithic Man. By J. Reid Moir. Pp. 67+29 plates. (Ipswich: W. E. Harrison.) 7*s.* 6*d.*

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